REMARKS

The present Amendment amends claims 1 and 2 and leaves claims 3-5 and 7-10 unchanged. Therefore, the present application has pending claims 1-5 and 7-10.

Claims 1-5 and 7-10 stand rejected under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as their invention. Various amendments were made to claims 1-5 and 7-10 to bring them into conformity with the requirements of 35 USC §112, second paragraph. Therefore, Applicants submit that this rejection is overcome and should be withdrawn.

Specifically, amendments were made throughout the claims 1-5 and 7-10 to overcome the objections noted by the Examiner in paragraphs 4 and 5 of the Office Action.

The Examiner's cooperation is respectfully requested to contact Applicants' Attorney by telephone should any further indefinite matter be discovered so that appropriate amendments may be made.

Claims 1-5 and 7-10 stand rejected under 35 USC §103(a) as being unpatentable over Cheng (U.S. Patent No. 6,138,103) in view of Ettl (U.S. Patent No. 5,946,662). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 1-5 and 7-10 are not taught or suggested by Cheng or Ettl whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to claims 1-5 and 7-10 so as to more clearly describe features of the present invention not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention now more clearly recited in the claims are not taught or suggested by Cheng or Ettl whether taken individually or in combination with each other as suggested by the Examiner.

The present invention is directed to a method of production planning, implemented in a production planning system in response to a request for production planning from a terminal operated by a user, for putting target values of a least one of a plurality of management indices related to production activity into a restriction condition, thereby solving a linear programming problem and calculating at least one of a production plan, a materials procurement plan, a marketing plan and a transportation plan by use of a computer.

According to the present invention the method includes the steps of receiving inputs from the user that are made of a selection of a least one of the management indices as evaluation objects and the target values of the selected management indices with data of various constants, and putting the target values into a restriction condition as constant data, putting variables that store respectively a positive estrangement value or negative estrangement value from the target values of the management indices selected as the evaluation objects into the restriction conditions, multiplying each of the variables that store respectively a positive estrangement value or a negative estrangement value by weighting a coefficient corresponding to

each of the management indices and flags for selecting whether an actual numeral value is optimized to equal to or greater or less than the target value of the management indices and composing an objective function for minimizing the sum total of the each estrangement value and solving a linear programming problem that optimizes the objective function.

The method according to the present invention further includes the steps of calculating actual values of all the management indices for which an evaluation of trade-offs is necessary from optimal solutions of the linear programming problem and showing the actual values calculated on a display of the terminal, receiving inputs from the user that are made of the adjusted target values of management indices by the user to improve the calculated actual values of management indices that cannot be allowed and putting the adjusted target values into the restriction condition for the update, repeating steps of solving a linear programming problem, calculating actual values of all the management indices for which the evaluation of trade-offs is necessary and showing the actual values calculated on a display of the terminal and receiving user input from the user of a judgment that all the calculated actual values of the management indices can be allowed and outputting at least one plan in a production plan of the product, the material supply plan, the sales plan and the transportation plan, according to the final optimal solutions of the linear programming problem.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention as

now more clearly recited in the claims are not taught or suggested by Cheng or Ettl whether taken individually or in combination with each other as suggested by the Examiner.

The amendments made to the claims more clearly describe that the present invention is directed to a method of planning the production plan to use linear programming.

To date, some methods for production planning by using linear programming have been proposed. For example, in NIKKEI DIGITAL ENGINEERING (December of 1998), as described in the Background of the Invention section of the present application, there is disclosed a proposed production planning method. These prior methods teach an objective function in which management indices are selected as an evaluation target individually, and are maximized or minimized individually, to solve the linear programming problem, and evaluated on an individual optimal value of each management index.

As understood by those skilled in the art, where there are two or more management indices of an enterprise, they can exist mutually in a trade-off relation. For example, if a certain management index is maximized, the other management index might become bad exceeding a preset tolerance. For instance, if a schedule is set to produce some items due to low inventory in China where the production cost is cheap, and if a ship is used to transport the items to various foreign countries, then the transportation time becomes long, and the stock of inventory may get even lower while transporting the items to the countries. Accordingly, the inventory turnover rate worsens and there is a high possibility that the minimum inventory cannot be achieved.

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Therefore, according to such prior methods it was necessary to re-calculate the production plan until an appropriate production plan was found.

The present invention is intended to solve the above-mentioned described problem by setting a target value of the management index into a restriction condition, thereby eliminating the need to recalculate the production plan until an appropriate production plan is found is required by the prior proposed methods.

None of the references of record particularly Cheng and Ettl are directed to solving the above mentioned problem to which the present invention is directed.

For instance, if it is thought that a certain management index need not be a maximum, but can be a value near a certain target value, then as per the present invention the target value of the management index can be set to a restriction condition. If the target values of other management indices are improved somewhat, then they can also be set to the restriction condition. These features of the present invention make it possible to solve the linear programming problem considering the balance between two or more management indices.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by Cheng or Ettl.

Cheng teaches a method of production planning relative to an uncertain demand. Cheng prepares two or more demand patterns as scenarios, and under the ability and part restriction, calculates the production plan where the inventory cost and the cost of the loss of the chance are minimized in each scenario. Cheng displays earnings and the profit according

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to each scenario, and according to each production plan on the Web screen, and compares a plurality of production plans.

In Cheng, the production plan of each of the two or more demand patterns is calculated, and the production plan is evaluated by earnings and profit. Thus, in Cheng there is no teaching or suggestion to obtain a production plan wherein the target values are earnings and profit as set by a budget as in the present invention as recited in the claims. In Cheng, it is necessary to prepare the demand data for each scenario beforehand. Such processing is very detailed and time consuming and certainly does not correspond to the features of the present invention wherein certain target values are simply set to a restricted condition.

The present invention sets the target values of the management indices such as earnings, profit, and the amount of money of the stock, etc. that general enterprises usually have as a budget, into a restriction condition. Thus, in present invention production plans are generated where the sum total of each estrangement value from each target value, is minimized. As per the present invention the management indices are calculated from the planned production plan, and are displayed, so that the estrangement value from the target value of the management index and the trade-off relation between the management indices are clearly and graphically illustrated on the display. In the present invention, if actual values do not reach the target values, the target values of the management indices that exist in the trade-off relation are adjusted, and the adjustment step and the plan step are repeated until the production plan eventually satisfies the target values.

Such features are clearly not taught or suggested by Cheng.

Thus, Cheng fails to teach or suggest a method of production planning, implemented in a production planning system, in response to a request for production planning from a terminal operated by a user, for putting target values of at least one of a plurality of management indices related to production activity into a restrictive condition, thereby solving a linear programming problem and calculating at least one of a production plan, a materials procurement plan, marketing plan and transportation plan by a computer as recited in the claims.

Further, Cheng fails to teach or suggest receiving inputs from the user that are made of a selection of at least one the management indices as evaluation objects and the target values of the selected management indices with data of various constants and putting the target values into a restricted condition as constant data, putting variables that store respectively a positive estrangement value or negative estrangement value from the target values of the management indices selected as the evaluation objects into the restrictive condition and multiplying each of the variables that store respectively a positive estrangement value or a negative estrangement value by weighting coefficient corresponding to each of the management indices and flags for selecting whether an actual numerical value is optimize to be equal to or greater or less than the target value of the management indices and composing an objective function for minimizing the sum total of each estrangement value as recited in the claims.

Still further, Cheng fails to teach or suggest solving a linear programming problem that optimizes the objective function, calculating actual values of all management indices for which an evaluation of trade-offs is

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necessary from optimal solutions of the linear programming problem and showing the actual values calculated on a display of the terminal, receiving inputs from the user that are made of the adjustment target values of management indices by the user to improve the calculated actual values of management indices that cannot be allowed, and putting the adjusted target values into the restrictive condition for the update as recited in the claims.

Still further yet, Cheng fails to teach or suggest repeating the steps of solving a linear programming problem, and calculating actual values of all the management indices for which the evaluation trade-offs is necessary and showing the actual values calculated on a display of the terminal and receiving inputs from the user of a judgment that all the calculated actual values of the management indices can be allowed and outputting at least one plan in a production plan of the product, the material supply plan, the sales plan and the transportation plan according to final optimal solutions of the linear programming problem as recited in the claims.

Therefore, as is quite clear from the above, Cheng fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

The above described deficiencies of Cheng are not supplied by any of the other references of record. Particularly, the above described features of the present invention as now more clearly recited in the claims are not taught or suggested by Ettl. Therefore, combining the teachings of Cheng and Ettl in the manner suggested by the Examiner in the Office Action still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

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Ettl calculates a stock level in each base point, based on the service rate, for the products to which production and sales are done in two or more base points.

Ettl is primarily concerned with a method to calculate the safe amount of stock needed in each base point. However, Ettl is not concerned with calculating a production plan as in the present invention as recited in the claims.

Thus, Ettl suffers from the same deficiencies relative to the features of the present invention as now more clearly recited in the claims as Cheng. Therefore, combining the teachings of Cheng and Ettl in the manner suggested by the Examiner in the Office Action does not render obvious the features of the present invention as now more clearly recited in the claims. Therefore, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 1-5 and 7-10 as being unpatentable over Cheng in view of Ettl is respectfully requested.
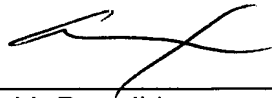
The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-5 and 7-10.

In view of the foregoing amendments and remarks, applicants submit that claims 1-5 and 7-10 are in condition for allowance. Accordingly, early allowance of claims 1-5 and 7-10 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (520.39403X00).

Respectfully submitted,

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